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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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EXAMINER

LE, DANG D

ART UNIT

PAPER NUMBER

2834

DATE MAILED: 11/14/2002

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/654,964

Applicant(s)

KOZORIZ, VASL'V.

Examiner

Dang D Le

Art Unit

2834

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 01 October 2002.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-36 is/are pending in the application.
- 4a) Of the above claim(s) 13, 15 and 23-36 is/are withdrawn from consideration.
- 5) ☒ Claim(s) 16 is/are allowed.
- 6) ☒ Claim(s) 1-12, 14 and 17-22 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 05 September 2000 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892) 4) ☐ Interview Summary (PTO-413) Paper No(s). _____
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948) 5) ☐ Notice of Informal Patent Application (PTO-152)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 2. 6) ☐ Other: _____

DETAILED ACTION

Election/Restrictions

1. Claims 13, 15 and 23-36 are withdrawn from further consideration pursuant to 37 CFR 1.142(b), as being drawn to a nonelected groups, there being no allowable generic or linking claim. Applicant timely traversed the restriction (election) requirement in Paper No. 10.
2. Applicant's election of group I in Paper No. 10 is acknowledged. Because applicant did not distinctly and specifically point out the supposed errors in the restriction requirement, the election has been treated as an election without traverse (MPEP § 818.03(a)).

Drawings

3. The drawings are objected to under 37 CFR 1.83(a). The drawings must show every feature of the invention specified in the claims. Therefore, the "cooling agent for cooling the closed rotor and stator closed loops" and "apparatus for energizing the cooled closed rotor and stator loops" as shown in claim 1 must be shown or the feature(s) canceled from the claim(s). No new matter should be entered.

A proposed drawing correction or corrected drawings are required in reply to the Office action to avoid abandonment of the application. The objection to the drawings will not be held in abeyance.

Claim Rejections - 35 USC § 112

4. The following is a quotation of the first paragraph of 35 U.S.C. 112:

Art Unit: 2834

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

5. Claims 1-11 and 17-22 are rejected under 35 U.S.C. 112, first paragraph, because the specification, while being enabling for "loops formed of the zero electrical resistance material" at a temperature below a superconductivity transition temperature "and angularly mounted on the stator", does not reasonably provide enablement for "Loops formed of the zero electrical resistance material and angularly mounted on the stator". The specification does not enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make the invention commensurate in scope with these claims. Claim 1 recites "loops formed of the zero electrical resistance material and angularly mounted on the stator". It is not known what material having zero electrical resistance.

6. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

7. Claims 1-11 and 17-22 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

There is insufficient antecedent basis for the following limitations in the claim. Claim 1 recites the limitations "the closed rotor and stator closed loops" in line 7 and "the cooled closed rotor and stator loops " in line 9.

Regarding claim 9, it is not clear how the stator loops mounted "so as to be off-center of the axis of the rotor".

Claim Rejections - 35 USC § 102

8. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

9. Claims 1-4, 6-8, 14, 21 and 22 rejected under 35 U.S.C. 102(b) as being anticipated by Rao.

Regarding claim 1, Rao shows an apparatus (Figure 1) for supporting a rotor (12) with respect to a stator (18) comprising:

- Loops (16) formed of a material having zero electrical resistance at a temperature below a superconductivity transition temperature and which are mounted on the rotor (12),
- Loops (22) formed of the zero electrical resistance material and angularly mounted on the stator (18) adjacent each of the closed rotor loops,
- A cooling agent (column 2, lines 30-35 and column 3, lines 62-67) for cooling the closed rotor and stator closed loops to a temperature below the superconductivity transition temperature, and
- Apparatus (28) for energizing the cooled closed rotor and stator loops and establishing magnetic linkages therebetween forming a bearing supporting a rotation of the rotor in an equilibrium stable free state within the stator.

Regarding claim 2, it is noted that Rao also shows sensors (66) mounted on the stator within a magnetic field zone of the stator loops for registering linear shifts and angular declinations of the rotor relative to the stator.

Regarding claim 3, it is noted that Rao also shows the rotor loops each comprise a planar short-circuited coil wound of a super conductive wire and mounted on an end of a shaft of the rotor.

Regarding claim 4, it is noted that Rao also shows the stator loops each comprise a planar short-circuited coil wound of the super conductive wire and angularly positioned at ends of the stator around the closed rotor loops.

Regarding claim 6, it is noted that Rao also shows the rotor comprising a plurality of closed rotor loops each wound as a coil of the super conductive wire around the rotor and each positioned in a circular plane about an axis of the rotor.

Regarding claim 7, it is noted that Rao also shows the stator comprising a plurality of closed stator loops each wound as a coil of the super conductive wire and ones of which are mounted in the stator in a plane around the rotor adjacent to a corresponding one of the closed rotor loops.

Regarding claim 8, it is noted that Rao also shows the rotor comprising a plurality of closed rotor loops each wound as a coil of the super conductive wire around the rotor and each mounted on the rotor shaft in adjacent planes each perpendicular to an axis of the rotor.

Regarding claim 14, it is noted that Rao also shows an apparatus (Figures 1-5) for supporting a rotor with respect to a stator comprising:

- A plurality of closed rotor short-circuited loops formed of a material having zero electrical resistance at a temperature below a superconductivity transition temperature and each of which are wound as a coil of wire around the rotor and positioned along the rotor in a circular plane about an axis of the rotor,
- A plurality of closed stator loops each wound as a coil of the super conductive wire and each mounted on the stator and each angularly (Figure 2) positioned in a plane round the rotor adjacent to a corresponding one of the closed rotor short circuited loops,
- A cooling agent for cooling the closed rotor and stator loops to a temperature below the superconductivity transition temperature, and
- Apparatus for energizing the cooled closed rotor and stable loops and establishing magnetic linkages therebetween forming a bearing supporting a rotation of the rotor in a stable equilibrium free state within the stator.

Regarding claims 21 and 22, it is noted that Rao also shows ones of said planar coils comprising a two-state switch having a resistive and a short state formed of coils of wire wound around a section of the planar short-circuited coils.

Claim Rejections - 35 USC § 103

10. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

11. Claims 5 and 9-12 are rejected under 35 U.S.C. 103(a) as being unpatentable over Rao in view of Hennessy et al.

Regarding claim 5, Rao shows all of the limitations of the claimed invention except for the closed stator loops each comprise a planar short-circuited coil wound of the super conductive wire configured to have two non-equal circular-arc sides joined at the ends thereof by radial segments.

Hennessy et al. show the closed stator loops each comprise a planar short-circuited coil wound of the super conductive wire configured to have two non-equal circular-arc sides joined at the ends thereof by radial segments (Figure 6) for the purpose of controlling the orientation of the rotor.

Since Rao and Hennessy et al. are all from the same field of endeavor; the purpose disclosed by one inventor would have been recognized in the pertinent art of the others.

It would have been obvious at the time the invention was made to a person having ordinary skill in the art to make the closed stator loops each with a planar short-circuited coil wound of the super conductive wire configured to have two non-equal circular-arc sides joined at the ends thereof by radial segments as taught by Hennessy et al. for the purpose discussed above.

Regarding claim 9, it is noted that Hennessy et al. also show the stator comprising a plurality of closed stator loops each wound as a coil of the super conductive wire and each angular spaced and mounted on the stator between ones of the rotor closed short-circuited loops so as to be off-center of the axis of the rotor.

Regarding claim 10, it is noted that Hennessy et al. also show the rotor comprising a pair of closed rotor loops each wound as a coil of the super conductive wire and mounted on an end of a shaft of the rotor in a plane perpendicular to an axis of the rotor shaft.

Regarding claim 11, it is noted that Hennessy et al. also show the stator comprising a pair of closed stator loops each having three coils wound of the super conductive wire and each coil angularly spaced adjacent to another one of the coils and wherein each closed stator loop is mounted on an end of the stator in a plane parallel to a corresponding one of the closed rotor loops.

Regarding claim 12, Rao shows a bearing apparatus comprising:

- A rotor having rotor loops each formed of a planar short-circuited coil wound of a super conductive wire having zero electrical resistance at a temperature below a superconductivity transition temperature and which are mounted on a shaft of the rotor at each end of the rotor,
- A stator enclosing the rotor and having closed stator loops formed as planar short-circuited coils wound of the super conductive wire and each angularly positioned at ends of the stator around the closed rotor loops,
- A cooling agent for cooling the closed rotor and stator closed loops to a temperature below the superconductivity transition temperature,
- Apparatus for energizing the cooled closed rotor and stator loops and establishing magnetic linkages therebetween forming a bearing supporting a rotation of the rotor in an equilibrium stable state within the stator, and

- Sensors mounted on the stator within a magnetic field zone of the closed stator loops and rotor loops magnetic linkages for registering linear shifts and angular declinations of the rotor relative to the stator.

Rao does not show the rotor having a pair of closed rotor loops and the stator having closed stator loops configured to have two non-equal circular-arc sides joined at the ends thereof by radial segments.

Hennessy et al. show the stator having pair of closed loops and configured to have two non-equal circular-arc sides joined at the ends thereof by radial segments for the purpose of controlling the orientation of the rotor.

It would have been obvious at the time the invention was made to a person having ordinary skill in the art to make the rotor with a pair of closed rotor loops and the stator with closed stator loops configured to have two non-equal circular-arc sides joined at the ends thereof by radial segments as taught by Hennessy et al. for the purpose discussed above.

12. Claims 17-20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Rao in view of Griffin.

Regarding claims 17 and 19, Rao shows all of the limitations of the claimed invention except for the rotor (or stator) loops each comprise a planar super conductive short-circuited coil wound from thin niobium-titanium wire.

Griffin shows the loops each comprise a planar super conductive short-circuited coil wound from thin niobium-titanium wire for the purpose of increasing load capacity.

Since Rao and Griffin are all from the same field of endeavor; the purpose disclosed by one inventor would have been recognized in the pertinent art of the others.

It would have been obvious at the time the invention was made to a person having ordinary skill in the art to make the rotor (or stator) loops with a planar super conductive short-circuited coil wound from thin niobium-titanium wire as taught by Griffin for the purpose discussed above.

Regarding claims 18 and 20, it is noted that Griffin also shows the loops each comprise a planar super conductive short-circuited coil wound from thin niobium-tin wire.

Allowable Subject Matter

13. Claim 16 is allowed.

14. The following is a statement of reasons for the indication of allowable subject matter: the record of prior art does not show apparatus for supporting a rotor with respect to a stator comprising:

- A pair of closed rotor short-circuited loops each wound as a coil of super conductive wire having zero electrical resistance at a temperature below a superconductivity transition temperature and each mounted on an end of a shaft of the rotor in a plane perpendicular to an axis of the rotor,
- A pair of planar stator members each having three coils wound of the super conductive wire and each coil angularly spaced adjacent to another one of the coils and wherein the three closed stator coils are mounted on an end of the

stator in a plane parallel to and adjacent to a corresponding one of the closed rotor loops.

Information on How to Contact USPTO

15. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Dang D Le whose telephone number is (703) 305-0156. The examiner can normally be reached on Monday through Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Nestor Ramirez can be reached on (703) 308-1371. The fax phone numbers for the organization where this application or proceeding is assigned are (703) 872-9318 for regular communications and (703) 872-9319 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-1782.

DDL
November 7, 2002

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